THE RECOVERY KERNEL

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* **[illegible] [illegible] [illegible].** [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible], [illegible] [illegible] [illegible] [illegible].

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findahelpline.com [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible] [illegible] [illegible], [illegible] **Blueprint** [illegible] [illegible] [illegible].

Recovery Kernel [illegible].

[illegible] [illegible] [illegible] [illegible] [illegible] · [illegible] [illegible] [illegible] [illegible] · [illegible]/[illegible]/[illegible] · [illegible] [illegible] [illegible].

⚠ [illegible] [illegible] [illegible] [illegible] [illegible] - [illegible] [illegible] [illegible] | [illegible] [illegible]: **1990** [illegible] [illegible] **findahelpline.com** [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] **3** [illegible].

[illegible] [illegible] [illegible], [illegible] [illegible].

[illegible] [illegible] Recovery Kernel [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]: [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible].

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible], [illegible] . [illegible], [illegible] [illegible] " [illegible]" [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 15% [illegible] [illegible] [illegible]. [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible], [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible] [illegible], [illegible] [illegible] [illegible] [illegible] - [illegible], [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] - [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Recovery Kernel [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible] [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible]. [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [

[illegible] 1 — [illegible].

THE CENTURION - [illegible].

[illegible], [illegible]. [illegible] - [illegible], [illegible].

[illegible]—[illegible], [illegible]—[illegible].

[illegible].

[illegible]	[illegible], [illegible].	[illegible]?
GABA ([illegible]).	GABA-A [illegible] - [illegible]. [illegible] GABA-A . [illegible], [illegible], [illegible], [illegible] - [illegible] GABA [illegible].	[illegible], GABA ceptor[illegible] [illegible]. [illegible], [illegible], [illegible]. [illegible]: [illegible], [illegible], [illegible], [illegible]. [illegible].
[illegible] ([illegible]).	NMDA [illegible] - [illegible]. [illegible]. [illegible].	[illegible] ceptor — [illegible], [illegible] "[illegible]" [illegible]. [illegible]: GABA [illegible], glutamate [illegible]. [illegible]. [illegible].
[illegible] ([illegible]Rewards [illegible]).	[illegible] ( ) [illegible]. [illegible] GABA/[illegible], [illegible], [illegible].	[illegible], [illegible], [illegible]. [illegible], [illegible], [illegible], [illegible], GABA [illegible]. [illegible], [illegible].
[illegible]	[illegible]—[illegible]	[illegible], [illegible], [illegible]örung [illegible]. 5-HTP, 5-MTHF, [illegible]

	[illegible]. [illegible].	[illegible]. [illegible], [illegible].
[illegible].	[illegible] (endogenous opioid) [illegible]—[illegible]-[illegible] (beta-endorphins)—[illegible], [illegible]. [illegible] OPRM1 A118G [illegible].	[illegible], [illegible], [illegible]. [illegible]. [illegible]. OPRM1 [illegible].

[illegible] - [illegible].

THE CENTURION - [illegible].

[illegible]: [illegible] (ADH1B [illegible]), [illegible] (ALDH2 [illegible]). [illegible]-- [illegible] DNA, [illegible], [illegible] "[illegible]" [illegible], [illegible].

[illegible], [illegible].

[illegible].	[illegible].	[illegible].
ADH1B [illegible] (rs1229984).	[illegible] — [illegible], ALDH2 [illegible].	[illegible] ADH1B [illegible] ALDH2 [illegible], [illegible]. [illegible] ADH1B [illegible] ALDH2 [illegible], [illegible]. [illegible].
ALDH2*2 (rs671) - [illegible].	[illegible]. * [illegible] (*1/*2): ~50%, [illegible]. * [illegible] (*2/*2): [illegible], [illegible].	Homozygous ALDH2*2 [illegible]— [illegible]. [illegible] AUD (Alcohol Use Disorder) [illegible], [illegible]

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ALDH2*1/*1 ( )	□□□□□□□□□□□□ □□□□□□ □□ □□□□□□□ - □□□□□□□□ □□□□□□ □□□□ □□□□□□□ □□□□□ □□ .	□□□□□□□□□□ □□□□□□□□ □□□□□□□□□ □□□□□□ □□□□□ □□□□□□□ □□□□□□□□ □□□□□□□□ □□□□□□. □□□□□□□□ □□□□□□□□□□ □□□□□□□□ (GABRA2, OPRM1, COMT) □□□□□□□□□□□□□ □□□□□□□ □□□□□□ □□□□□. □□□ □□□□□□□□ □□□□□□ □□□□□ □□□□□□ □□□□□ □□□□□ □□ □□□ □□□□□□□ □□□□□ □□□□□ □□□ □□□□□□, □□ ALDH2 □□□□□□□□□□□□□. □□□□□□□□□ □□□ □□□□□□□□□ □□□□□ □□□□□ □□ □□□ □□□□□□□ □□ □□□□□ □□□□□□□.

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THE CENTURION - □□□□□□□□ □□□□□□□□ □□□.

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- [redacted]: [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted], [redacted] [redacted] [redacted] ([redacted] [redacted] [redacted] [redacted]), [redacted] [redacted] [redacted] [redacted] [redacted] [redacted]. [redacted] [redacted] [redacted] [redacted] [redacted], [redacted] [redacted] [redacted] [redacted] [redacted].
- [redacted] [redacted]: [redacted] [redacted] [redacted] [redacted] [redacted]. [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] [redacted]

[illegible] 2 - [illegible].

[illegible]. [illegible]—[illegible]proximately 50–60% [illegible]. [illegible]. [illegible], [illegible] . Recovery Kernel [illegible], [illegible]. [illegible], [illegible].

[illegible] DNA [illegible].

[illegible]	[illegible]?	[illegible].	[illegible].
GABRA2	GABA-A ceptor α-2 [illegible] -- [illegible].	rs279858 / rs279845 [illegible].	[illegible] Recovery Kernel [illegible]. [illegible], GABAergic [illegible]— [illegible]. [illegible], [illegible]. [illegible], [illegible]priority [illegible] GABA [illegible]— [illegible], GABA [illegible], [illegible].
OPRM1	Mu-opioid - [illegible].	A118G (rs1799971)	A118G [illegible], [illegible], [illegible] nucleus accumbens [illegible] dopamine [illegible]. [illegible] A/A [illegible] "[illegible]" [illegible]. [illegible], naltrexone [illegible]. [illegible] A118G [illegible], naltrexone [illegible]. [illegible].
COMT	[illegible].	Val158Met (rs4680)	[illegible] COMT (Met/Met, Sage [illegible]) [illegible]. [illegible], [illegible] GABA [illegible]. [illegible]

			[illegible], [illegible]. [illegible] COMT (Warrior) [illegible]. [illegible], [illegible].
ALDH2	[illegible] 2 — [illegible].	rs671 (*1/*1, *1/*2, *2/*2)	[illegible]. *2/*2 [illegible], [illegible], [illegible], [illegible]. [illegible]. N-acetyl cysteine [illegible].
ADH1B	Alcohol dehydrogenase - [illegible].	rs1229984 ([illegible]).	[illegible] ADH1B (His48 allele) [illegible] - [illegible], [illegible]. [illegible] ADH1B [illegible], [illegible], [illegible] - [illegible].
MTHFR	[illegible] (methylation) [illegible] (neurotransmitter) [illegible].	C677T (rs1801133), A1298C (rs1801131)	[illegible], [illegible]. MTHFR [illegible], [illegible] - [illegible]. 5-MTHF [illegible], [illegible].
DRD2 / ANKK1	[illegible] D2 ceptor [illegible].	Taq1A (rs1800497)	A1 allele (D2 [illegible]) [illegible]. [illegible], -[illegible] [illegible]ergic [illegible]. [illegible], [illegible] - [illegible], [illegible] - [illegible].

SLC6A4 / 5-HTTLPR	□□□□□□□□□.	/ □allele.	/ □□□□ □□□□□□□□□ □□□ □□□□□□□□□□□ □□□□ □□□□□□ □□□□□□□ □□ □□□□ □□□□□□ □□□□□□□ □□□□□□□ □□□□□ - □□□□□□□□□□, □□□□□□ □□□□□ □□□□ □□□□□□□ □□□ □□ □□□□. 5-HTP, 5-MTHF, □□□□□□□□□□□□□ □□□□□ □□□□□□□□□ □□□□□□□□□□ □□□□ □□□□□□□□□□□, □□ □□□ □□□□□□ □□□□□□□ □□□ □□□□ □□□□□. SSRIs (□□□□□□□□□□ □□□□□□□□□□ □□□□□□□□□□□□ □nh□□□□□□□) □□□□□□□□□□ □□□□□□ □□□□□□ □□□ □□□□ □□□, □□ □□□□□□□□□□□□□ □□□ □□□□□□□ □□ □□□□□.
CYP2E1	P450 2E1 - □□ □□□□□ □□□□□□□□□ □□□□□□□□□ □□□□; □□□□□□□□ □□□□□ □□□□□□□.	□ Beberapa πολυμορφisms (rs2031920, rs3813867).	□□□ CYP2E1 □□□□□□□□ □□□□□□□ □□□□□□□□□ □□□□□ □□□□□□□□□□ □□□□□□□□ □□□□□□. □□ □□□ □□□□ □□ □□□□□ □□□□□ □□□□□ □□□□□□□□□ □□□□ □□ □□□ □□□ □□□□□□ □□□□□. N-acetyl cysteine (NAC) □□□□□□□□□□□□□□□ □□□ (□□□□□□□□□□□□ □□□□□□□, alpha-lipoic acid) □□□ □□□□□□□□□□ □□□□□□□□□□ □□□□□□ □□.
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- [illegible] [illegible] [illegible] [illegible] [illegible]? [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]? → [illegible] [illegible] MTHFR [illegible] [illegible] [illegible]. [illegible] 5-MTHF [illegible] [illegible].

[illegible] 3 - [illegible] [illegible].

⚠ [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].

3.1 - [illegible]: [illegible] [illegible]?

THE CENTURION - [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible].

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[illegible] [illegible] [illegible] [illegible]— [illegible] [illegible] [illegible], [illegible] [illegible]—[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]:

- [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] 2-3 [illegible] [illegible] [illegible] [illegible].
- [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]: [illegible] [illegible], [illegible], [illegible] [illegible] [illegible], [illegible] [illegible], [illegible] [illegible], [illegible], [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].
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- [illegible] [illegible] [illegible] [illegible] (delirium tremens) [illegible] [illegible]? [illegible] [illegible]: [illegible], [illegible], [illegible] [illegible], [illegible] [illegible].
- [illegible] [illegible] GABAergic [illegible] [illegible] [illegible] - [illegible] [illegible] [illegible] [illegible] [illegible] [illegible].
- [illegible] GABRA2 [illegible] [illegible] [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] [illegible].

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[illegible] 24-72 ([illegible]).	[illegible] GABA-[illegible]; [illegible]; [illegible].	[illegible], [illegible], [illegible], [illegible].	[illegible]. [illegible]: GABA [illegible] kekurangan [illegible] benzodiazepine [illegible]. [illegible] thiamine (B1) [illegible] - Wernicke's [illegible].
[illegible] 3-7 ([illegible]).	[illegible]; GABA [illegible]; glutamate [illegible]; [illegible].	[illegible], [illegible], [illegible], [illegible], [illegible], [illegible].	[illegible] ([illegible] 4). [illegible] - [illegible] - [illegible]. [illegible].
[illegible] 1-4 ([illegible]).	GABA ceptor [illegible]; [illegible]; [illegible]; [illegible].	[illegible], [illegible]zust[illegible], [illegible], [illegible], [illegible].	[illegible]. [illegible] - BDNF [illegible]. PAWS [illegible] - [illegible] 3.3 [illegible]. [illegible] ([illegible] 7).
[illegible] 1-6	GABA ceptor [illegible]; [illegible]; [illegible]	[illegible]; [illegible]; [illegible]	[illegible], [illegible], [illegible]. [illegible] MRI [illegible]

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[illegible] 6 - 24+.	[illegible]; GABA [illegible] glutamate [illegible]; dopamin [illegible] serotonin [illegible]; [illegible], [illegible] cirrhosis [illegible].	[illegible], [illegible]; [illegible]; [illegible].	[illegible], [illegible] 12-24 [illegible], [illegible]. [illegible].

3.3 - [illegible].

⚠ PAWS [illegible]. [illegible]. [illegible] .

[illegible]. GABA [illegible] glutamate [illegible], [illegible], [illegible] - [illegible]. [illegible], [illegible], [illegible], [illegible]. [illegible], [illegible].

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5-MTHF (L-methylfolate)	□□□ - □□□□ □□□□	400-1000 mcg □□□□□□.	□□□□ □□□□□ □□□□□□ □□□□□□ □□□□□□, □□□□□□□ □□□□□□ □□□□ □□□□□□□□□ MTHFR □□□□□□□□ □□□□□□□□ □□□□□□□□□ □□□□□□□□□□ □□□□□□□ □□□ □□□□□□□ □□□□□□. 5-MTHF □□□□□□□□□ □□□□ MTHFR □□□□□□□□ □□□□ □□□□□ □□□□□□ □□□□, □□ □□□□□□ □□□□□□ □□□□□□□□□ □□□□□□□□ □□□□□□□□ □□□ □□□□. □□□□ □□□ 1-2 □□□ □□□ □□□□□ □□□□ □□□□□□ □□□□□□□□ □□□□□□□□□□□□□ □□□□□.
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NAC (N-Acetyl Cysteine)	600-1200mg □□□□□□ □□□□□□□.	□□□□□□ □□ □□□□ □□□□□ □□□□.	□□□□□□□□□□□□□ □□□□□□□□--NAC, □□□□□□□□□□□□□ □□□□□ □□□□□□□, □□□□□□□ □□□□□□□□□□□□□□□□□ □□ □□□□□ □□□□□ □□□□ □□□□□□ □□. □□□□□□ Substance □□□□□□ □□□□□□□ □□□□□□□ □□□□□□□□□□□□□ □□□□ □□□□□. NAC □□□□ □□□□□□□ □□□□□□□ □□□□□ □□□□□□□□ □□□□□□□ □□□□□□ □□□□□, □□□□□□□ □□ glutamate □□□□□□□□□□□ □□□□□ □□□□□□ Substance □□□□□

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[illegible] ([illegible]).	140–420mg (70–80% [illegible]).	[illegible].	[illegible]. [illegible], [illegible], [illegible]. [illegible], [illegible], [illegible]. [illegible]. [illegible], [illegible].
[illegible]-[illegible] (ALA)	300-600mg [illegible].	[illegible], [illegible].	[illegible] beiden [illegible] - [illegible]. [illegible], [illegible] C [illegible] E [illegible]. [illegible]. ALDH2 [illegible], [illegible].
TUDCA (tauroursodeoxycholic acid)	250-500mg [illegible].	[illegible].	[illegible] ármaz[illegible], [illegible] (hepatoprotective) [illegible], [illegible] (endoplasmic reticulum) [illegible] (mitochondrial) [illegible]. [illegible]. [illegible], [illegible].
[illegible].	1-2g [illegible].	[illegible].	[illegible]. [illegible]. [illegible] Supplements [illegible], [illegible]. [illegible], [illegible]

			[illegible] - [illegible].

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THE CENTURION - [illegible]. [illegible]

[illegible], [illegible], [illegible] — GABA [illegible] ([illegible]), dopamine [illegible] ([illegible]heartedness [illegible]), [illegible] opioid/endorphin [illegible] ([illegible]). [illegible], [illegible], [illegible].

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GABA [illegible] ([illegible]).	[illegible]. [illegible]. [illegible]. [illegible].	4-7-8 [illegible] - [illegible]. L-theanine 200mg. [illegible] - [illegible] " " [illegible], [illegible]. [illegible].
[illegible].	[illegible], [illegible], [illegible]. [illegible]. [illegible]. [illegible].	[illegible] - [illegible] dopamine. [illegible] ([illegible]). [illegible], [illegible] bersama [illegible]. [illegible] ([illegible] 6) [illegible].
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□□□□ □□□□□□ □□□□□□□□□ (□□□ 6-24+).	24, 25, C-28, C-31	□□□□□□□□□ □□□□□□□□, □□□□□□□□□□□□, □□□□□□□□□□ □□□□□□□□□□□□□ □□□□□□□□□□□□.	□□□□□ □□□□□□□□□□ □□□□□ □□□□□ □□□□□□ Recovery Kernel □□ Naloxone □□□□□□□□□□ □□□□□□□□□□□ □□□□ □□□□□□□□□, □□□□□□□ □□□□ □□□□ □□□□□□ □□□□□□□□ □□□□□□□ MRI □durch□□□□□□□□□□□ □□□□□ □□□□□□ □□□□□ □□□□ □□ □□□□□□□ □□□□□□□ □□. □□□□□ □□□□□□□□ □□□□□□□□□□□□□ □□□□ □□ □□□□□□□□□, 18 □□ □□□□□ □□ □□□□ □□□□□□□□□ □□□□□□□ □□□□□□□□□ □□□□□□ - □□□□□, □□□□□□□ □□□□□ □□ □□□□□ □□□□□□□ □□□□ □□□□□□. □□□□ □□□□□□□ □□□□□. □□□□ □□□□□□□ □□□□□□□□□□□ □□□□□ □□□□ □□□□□□□ □□□□□□ □□□□□ □□□□□□ □□□□□□ □□□□□□.

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FDA □□□□□□ □□□□□ □□□□ □□ □□□□□□:

* **Naltrexone (ReVia, Vivitrol)**
* **Acamprosate (Campral)**
* **Disulfiram (Antabuse)**

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Naltrexone (□□□□□□ □□□ □□ □□□□□□ / Vivitrol).	- □□□ □□□□□□□□□ □□□□□□ □□□□□□ □□□□□, □□ □□□□ □□□□□□□ □□□□ □□ □□□□ □□□ □□.	□□□□□□□ - □□□□ □□□ □□□□□□□ □□□□□□ □□□□□□□□□□ □□□□□□ □□.	OPRM1 A118G □□□□□□□ □□□□□□ □□□□ □□□ □□□□□□□ □□□□□□□ - □□ 3 □□□□□□ □□□□□ □□□□□□□□□□ □□ □□□□□. □□□ □□□ □□□□□□□ □□□□ □□□, □□□ □□□□ □□□ □□□ □□□□□□ □□□□□□□□□. □□□□□ □□□□□□□□ (Vivitrol) □□□□□ □□□□□□□□□□□□ □□□□□ □□□□□ □□□□□□□□ □□□□ □□. " □□□□□" - □□□ □□□□□□□ □□□□□□□□□ قبل □□□□□, □□□□□□ □□□□□ □□□□ □□□ □□□□□ - □□ □□□□□ □□□ □□□□□□ □□□□□□ □□□□□□□□□ □□□□ □□□□ □□□ □□□□□□ □□□□□□□.
Acamprosate (Campral)	GABA □□ □□□□□□□□□ □□□□□ □□□□□ - □□□□□□□ □□□□ □□□□□□□□ □□□□□ □□□□ □□□□□□□□ □□□ □□□□, PAWS (Post-Acute Withdrawal Syndrome) □□□□□□□□□□□ □□ □□□ □□□□; abstinence □□□□ □□□□□ □□□□□□ □□□ □□□□.	□□□□□□□ - FDA □□□□□□□□ □□□ □□; PAWS □□□□ □□□□□□□□□□ □□.	□□□□□□□□□ GABA□□□□□□ □□□□ □□□□□□□□□□ (GABRA2 □□□□□□□) □□ □□□□ PAWS (Post-Acute Withdrawal Syndrome) □□□ □□□□□□□□□□ □□□□□□ □□. □□□ □□□□□□□ □□□□ □□□□□□□ □□□, □□ □□□□□□ □□□ □□ □□□ □□□□□□□ □□□□□□□□□□ □□□□□□□. □□□ □□□□□ □□□□□□ □□□ □□□ □□□ □□□□□ □□□ □□□□. □□□□□□□ □□□□□ □□□ □□□ □□ □ □□□□□□□□□□ □□□□ □□□□□□

			[illegible].
Disulfiram (Antabuse)	ALDH2 [illegible] - [illegible], [illegible], [illegible], [illegible] [illegible].	[illegible] - [illegible]; [illegible] [illegible].	[illegible] ([illegible], [illegible], [illegible]). ALDH2*2 [illegible] - [illegible]; [illegible]. [illegible], [illegible] [illegible].
GLP-1 ([illegible], [illegible]).	[illegible]: [illegible]. 2025-2026 [illegible], [illegible] 50-60% [illegible]urangan[illegible] [illegible].	[illegible] - [illegible]; 2026 [illegible] [illegible].	[illegible]. [illegible], [illegible] - [illegible] - [illegible]. [illegible]consume [illegible]. AUD (Alcohol Use Disorder) [illegible], [illegible] kedua [illegible]. [illegible].
[illegible]	GABA [illegible] - [illegible], [illegible].	- [illegible]; [illegible] (AUD) [illegible].	PAWS ([illegible]) [illegible] 1-3 [illegible]. [illegible]: gabapentin [illegible] sendiri [illegible], [illegible]. [illegible]. GABRA2 [illegible], [illegible], [illegible].

[illegible].

THE CENTURION - [illegible]. [illegible].

GABA , [illegible]. [illegible], [illegible]. [illegible], [illegible]. [illegible], [illegible]. [illegible]. [illegible]-- [illegible], [illegible], [illegible].

[illegible]. [illegible], [illegible], [illegible]. [illegible]. [illegible].

Recovery Kernel [illegible] - [illegible], [illegible], [illegible], [illegible], [illegible]. [illegible]. [illegible], [illegible] "[illegible] [illegible]ότε [illegible]" [illegible].

[illegible]. GABA ceptor [illegible]. [illegible]. [illegible]. [illegible]—[illegible], [illegible], [illegible]. [illegible], [illegible], [illegible]—[illegible], [illegible], [illegible], [illegible]—[illegible].

Recovery Kernel [illegible], [illegible]. [illegible].

[illegible]. [illegible].

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Recovery Kernel [illegible].

Crisis: call or text 988 | Emergency: 911 | SAMHSA: 1-800-662-4357

⚠ [illegible] - [illegible].

[illegible], [illegible] Recovery Kernel [illegible]? | -[illegible].